

What is Claimed is:

- Sub A
1. A battery to which is attached a label that contains a tester for the battery, wherein the label is comprised of a tester circuit that has a first end to contact a first terminal of the battery and a second end to contact a second terminal of the battery, which ends are electrically connected to each other via an area of controlled resistivity, and which circuit is electrically insulated from the terminals of the battery except for the first and second terminal contact ends; and an indicating material disposed in responsive contact with the area of controlled resistivity in the tester circuit.
  2. The battery of Claim 1, wherein the label is comprised of a base electrically insulating layer that is adhered to the housing of the battery and the tester circuit is disposed on the surface of this insulator layer, and which insulator has an opening in it aligned with one of the ends of the tester circuit.
  3. The battery of Claim 1, wherein the first terminal contact end of the tester circuit is in electrical contact with the first terminal of the battery via a conductive tab, and the first terminal of the battery is

a conductive cover and the conductive tab is in contact with the cover.

4. The battery of Claim 2, wherein the first terminal contact end of the tester circuit is in electrical contact with the first terminal of the battery via a conductive tab.

- Sb. A 2* 5. The battery of Claim 4, wherein the battery is comprised of a conductive housing that is in electrical contact with one of the battery terminals, and the second terminal contact end of the tester circuit is in contact with the housing through the opening in the insulator layer.

6. The battery of Claim 1, wherein the first terminal contact end of the tester circuit is in electrical contact with the first terminal of the battery via a conductive tab, and the second terminal contact end of the tester circuit is in electrical contact with the second terminal of the battery via a conductive tab.

7. The battery of Claim 6, wherein the label is comprised of a base electrically insulating layer that is adhered to the housing of the battery and the first and second

conductive tabs are disposed on the surface of this insulator layer.

8. The battery of Claim 7, wherein the label comprises a second electrically insulating layer disposed over the first insulating layer, the tester circuit is disposed on the surface of this second insulator layer, and which second insulator has an opening in it aligned with one of the ends of the tester circuit and that end's respective conductive tab on the first insulator layer.
9. The battery of Claim 2, wherein the area of controlled resistivity of the tester circuit has a constant resistance.
10. The battery of Claim 2, wherein the area of controlled resistivity of the tester circuit has a varying resistance.
11. The battery of Claim 5, wherein the area of controlled resistivity of the tester circuit has a constant resistance.

12. The battery of Claim 5, wherein the area of controlled resistivity of the tester circuit has a varying resistance.

Sub A 3  
13. The battery of Claim 9, wherein the indicating material is a thermally sensitive material.

14. The battery of Claim 13, wherein the thermally sensitive material is a thermochromic ink.

Sub A 4  
15. The battery of Claim 10, wherein the indicating material is a thermally sensitive material.

16. The battery of Claim 15, wherein the thermally sensitive material is a thermochromic ink.

17. The battery of Claim 13, wherein the thermally sensitive material is a liquid crystal material.

18. The battery of Claim 15, wherein the thermally sensitive material is a liquid crystal material.

19. The battery of Claim 11, wherein the indicating material is a thermally sensitive material.

20. The battery of Claim 19, wherein the thermally sensitive material is a thermochromic ink.
- Sub A* <sup>b</sup> 21. The battery of Claim 12, wherein the indicating material is a thermally sensitive material.
22. The battery of Claim 21, wherein the thermally sensitive material is a thermochromic ink.
23. The battery of Claim 19, wherein the thermally sensitive is a liquid crystal material.
24. The battery of Claim 21, wherein the thermally sensitive material is a liquid crystal material.
25. The battery of Claim 1, wherein the label further comprises a protective layer disposed over the indicating material.
26. The battery of Claim 1, wherein the label is a shrink tube label.
27. The battery of Claim 1, wherein the indicating material is a combination of layers of thermochromic inks that are activated at different temperatures.

28. A battery, to which is attached a label that contains a tester for the battery, wherein the label is comprised of:

- a) a tester circuit comprised of an electrically conductive material, and that has a first terminal contact end and a second terminal contact end connected to each other via an area of controlled resistivity;
- b) an indicating material disposed in responsive contact with the area of controlled resistivity of the tester circuit; and
- c) a first terminal connector that connects the first terminal contact end of the tester circuit with a first terminal of the battery, and a second terminal connector that connects the second terminal contact end of the tester circuit with the second terminal of the battery, which a terminal has a polarity opposite that of the first terminal;

wherein at least one of the terminal contact ends of the tester circuit is positioned out of contact with its respective terminal connector to provide an open tester circuit.

29. The battery of Claim 28, wherein the label is further comprised of an electrically insulative layer adhered to the housing of the battery, and on which layer the tester circuit is disposed.
30. The battery of Claim 29, wherein the first terminal connector of the label is a conductive tab that is disposed on the insulative layer and is in contact with one of the terminals of the battery.
31. The battery of Claim 30, wherein the second terminal connector is the battery housing which is conductive and is in electrical contact with a terminal of the battery, and the insulative layer has an opening in it which is aligned with the second terminal contact end of the tester circuit such that this end of the tester circuit is out of contact with the housing of the battery.
32. The battery of Claim 31, wherein the tester circuit is closed by establishing contact between the second terminal contact end of the tester circuit and the housing of the battery through the opening in the insulative layer.

33. The battery of Claim 28, wherein the label is further comprised of a positive terminal connector that is in contact with the positive terminal of the battery and a negative terminal connector that is in contact with the negative terminal of the battery.
34. The battery of Claim 33, wherein the label is further comprised of a base electrically insulative layer adhered to the housing of the battery, and which positive and negative terminal connectors are conductive tabs that are disposed on the base insulative layer.
35. The battery of Claim 34, wherein the label is comprised of a second electrically insulative layer disposed on the base insulative layer over the connector tabs, and which second insulative layer has a first opening aligned with the positive connector tab, and second opening aligned with the negative connector tab.
36. The battery of Claim 35, wherein the tester circuit is disposed on the second insulative layer with the first terminal contact end aligned with the first opening over the positive connector tab and the second terminal contact end is aligned with the second opening over the negative connector tab such that both the first and



second terminal contact ends of the tester circuit are out of contact with the terminals of the battery.

37. The battery of Claim 36, wherein the tester circuit is closed by establishing contact between the first terminal contact end and the positive connector tab through the first opening, and the second terminal contact end and the negative connector tab through the second opening.

Sub A<sup>8</sup>  
38. The battery of Claim 37, wherein the indicating material is a thermally sensitive material.

39. The battery of Claim 38, wherein the thermally sensitive material is a thermochromic ink.

40. The battery of Claim 39, wherein the thermally sensitive material is disposed on a film layer support that is adhered to the second insulative layer on which the tester circuit is disposed.

41. The battery of Claim 38, wherein the label further comprises a protective layer disposed over the thermally sensitive material.

42. The battery of Claim 40, wherein the label further comprises a protective layer disposed over the thermally sensitive material.
43. A battery to which is attached a label that comprises means for testing the capacity of the battery and a means for indicating the capacity of the battery, wherein the testing means comprises means for completing a circuit between the terminals of the battery, and wherein the means for indicating the capacity of the battery is in responsive contact with the means for testing the capacity of the battery.
44. The battery of Claim 43, wherein the indicating means is an electrochromic material that responds to a change in the voltage or electric field of the battery by changing color.
45. A process for attaching a label comprised of a tester for a battery to a battery, comprising the steps of:
- a) applying a conductive layer to a nonconductive base film layer, wherein the conductive layer has first and second terminal contact ends that are electrically connected to each other via an area of controlled resistivity;

- b) placing a thermally sensitive material in thermally responsive contact with the area of controlled resistivity; and
- c) adhering the surface of the nonconductive base film layer opposite the surface on which the conductive layer is deposited to the housing of the battery.

Add A<sup>9</sup> →  
Add B →